



UNIVERSITY EXAMINATIONS

FIRST YEAR EXAMINATIONS FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN ELECTRICAL AND ELECTRONIC ENGINEERING

COSC 113: INTRODUCTION TO COMPUTER PROGRAMMING

STREAMS: BSC (Y1S2)

TIME: 2 HOURS

DAY/DATE: THURSDAY 01/04/2021

8.30 A.M. – 10.30 A.M.

INSTRUCTIONS: ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

- (a) Explain three qualities of a good computer program. (3 marks)
- (b) Explain the cause of the following types of errors in a computer program:
(i) Syntax errors (2 marks)
(ii) Run time errors (2 marks)
- (c) Explain the difference between a loop and a function in C programming. (3 marks)
- (d) Define the term **variable** and explain why variables must be declared in a C program. (4 marks)
- (e) Show the print out expected when the code shown below executes. (4 marks)
- ```
int count = 2;
int sum = 0;
while (count <= 100)
{
 sum = sum + count;
 printf("Sum is: %d \n", sum);
 count = count * 3;
}
```
- (f) Write a C program to accept a score input. The program will then display the message PASS if the score is 40 and above. Otherwise the program will display FAIL for any score less than 40. (6 marks)
- (g) Design an algorithm using a flow chart to find the total of all the numbers divisible by three in the range 0 to 100. (6 marks)

**QUESTION TWO (20 MARKS)**

- (a) Explain the use of comments in a computer program. Using an example, explain the two types of comments in C programming language. (4 marks)
- (b) Design an algorithm using a flowchart for a program that takes a list of 100 integer values, calculates and outputs the total and the average. (6 marks)
- (c) Write a C program to capture 10 integer values, find and display the largest value of the captured values. The program should prompt the user to enter the values. Hint: use an array to store the integer values. (10 marks)

**QUESTION THREE (20 MARKS)**

- (a) Write the output of this program code. (4 marks)

```
int a = 10;
while (a < 20)
{
 printf("value of a: %d \n", a);
 a = a + 1;
 if (a > 15)
 {
 break;
 }
}
```

- (b) Using constant pie as 3.142, write a C program to calculate the area and circumference of a circle. The user should enter the radius of a circle. (6 marks)
- (c) Write C program that display the grade of a score entered by the user. Use the university grading system. The program should report an error if the score entered is less than 0 or greater than 100. (10 marks)

**QUESTION FOUR (20 MARKS)**

- (a) Explain the role of the `printf` and `scanf` functions in C. Give examples to illustrate your answer. (4 marks)
- (b) Write a C function largest that returns the largest value of the scores entered. The function takes an array of scores as an argument. (6 marks)
- (c) Using a while loop write a C program code segment to find the sum and the average of all the even numbers in the range 7 to 99. (10 marks)

**QUESTION FIVE (20 MARKS)**

- (a) Design an algorithm using a flowchart for a program that takes a list of 100 integer values, calculates and outputs the total and the average. (10 marks)
- (b) Using functions, write a C program that prompts the user to enter marks for five subjects, store the marks in an array, computes and displays the total and the average. (10 marks)

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